Science Sauce Online

A source for free flipped learning lessons

Flipped learning reverses the traditional classroom process of “learn it in school, practice at home”. Flipped learning involves students learning new content at home through a video, reading, listening or other activity. They then come to class with the foundation knowledge, ready to really engage with the topic. This is a flipped learning lesson with self-study materials and suggested class activities.

Resources for this lesson, including the student tasks, can be found at: **ScienceSauceOnline.com**	Enter lesson code: **01203**

Lesson Topic:

SPECIALISED CELLS

Age: 14-16

Self study input method: Video

Self study task: Question sheet

Classwork prep time: Near zero

STUDENT PRE-CLASS TASK

- Watch the video: “Specialised cells”.
- Answer the questions on the student homework task sheet.

IN-CLASS TASKS

CIRCLE DRAWINGS: Students work in groups, each student having a piece of paper in front of them, and have 20 seconds to start the drawing before passing it to the next student, who continues, while the first student receives the next drawing.

Detailed procedure:

- Students sit in groups of 8 (as there are 8 specialised cells), in a circle around a table (or with something to rest on for drawing)
- Each student has a piece of paper that is blank except for the name of the cell (e.g. “palisade cell”) written in top corner. Each student has a different cell written on their piece of paper.
- The teacher says “start” and the students have 20 seconds to start the drawing.
- After 20 seconds the teachers shouts “pass” and the students must pass their drawing to the next student in the circle, who continues the drawing. Each student should have a drawing passed to them every time.
- The activity continues for 10 minutes.
- Once 10 minutes is complete, students must stop and can review their drawings, discuss as a group, and strategise for the next attempt.
- Repeat the activity, with the goal that the next attempt should have near-perfect drawings.

Guidelines

- Diagrams should be labeled
- Students MUST draw each time, even if the cell image looks complete when passed to them. They could, for example, add speech bubbles or annotations if there is nothing new to contribute to the drawing.
- If 8 students per group is not possible, there can be empty seats. E.g. in a group of 6 students, there would be two empty seats, so drawings can be passed to the empty seat and for 20 seconds at a time nobody will work on those drawings. Where there are groups larger than 8, there can be more than one instance of each drawing (in this way, this can be used as a whole class activity).

Time (mins)	Students…	Teacher…
2	In groups of about 4 or 5, review answers to the homework task.	Monitors.
3	Review answers (and make corrections if necessary).	Gives answers to the student task sheet.
5	Listen to instructions and get into groups.	Gives instructions on the circle drawing activity.
15-30	**Circle drawing activity** (Length of time depends on number of repeats of the activity).	Monitors. Uses stopwatch/clock and announces when time to pass the drawings on.
10	**Feedback:** Diagrams are displayed (on the wall if possible) and students work in pairs and must look at each diagram to note down two strengths and two weaknesses in each diagram. (Note that students can be encouraged to be more critical than usual here as the drawings are a collective piece of work and criticisms don't focus on a single student's work).	Monitors and discusses strengths and weaknesses in each diagram.
10	**Plenary:** Work in pairs. Choose a specilised cells and imagine they are explaining it to a much younger brother/sister. Their partner plays the role of brother/sister. Switch roles. Repeat for a different cell, time depending.	Monitors.

ANSWERS TO STUDENT TASK

Answers to the student task sheet will be relatively obvious for subject teachers, and can all be found by reviewing the student self-study resources.

Answers are not published here, as these sheets are easily accessible by students. If you need clarification on any of the questions please feel free to email me and I'll get back to you ASAP.

contact@sciencesauceonline.com